

Information Systems Technology

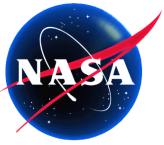
- **ESDIS Prototyping Overview**
 - Objectives
 - Technology Categories
 - Program Snapshot
 - <http://proto.gsfc.nasa.gov/esdis>
- **ESTO FY99 - FY00 Activities and Plans**
 - Info Technology RFI / NRA
 - Recent Actions
 - <http://ntrpio.nasa.gov/esto.html>
- **Next Steps**

*Briefing to the Earth Science
Technology Strategy Team
Jan. 27-28, 1999*

K. Moe 1/27/99

ESTO

Earth Science Technology Office



EOSDIS Technology Investment

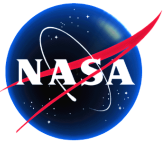
Prototyping Objective –

Demonstrate technology application to broad EOSDIS:

- **Reduce Cost**
- **Increase System Flexibility and Science Effectiveness**
 - Reduce dependence on single design / single contractor
 - Transition to more distributed architecture
 - Assess emerging technologies and potential for insertion
 - Avoid future cost of obsolete technology
 - Enhance functionality

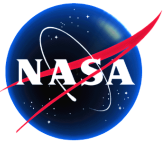
Note: EOSDIS is not just ECS

- **EOSDIS is ECS + DAAC-unique + Interagency extensions + International extensions + cooperative reuse by general Earth science community (federation)**



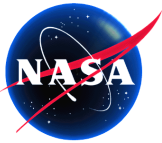
Technology Categories (FY99 \$)

- **Open Distributed Architecture (\$900K)**
 - Technology assessments of middleware (replacing DCE); CEOS Catalog Interoperability Protocol prototype
- **Interactive Access (\$2M)**
 - Custom clients, user query/browse techniques; leveraging web technologies; data subsetting, data mining, data visualization; HDF-EOS tools
- **Storage Management (\$1M)**
 - Standards for petabyte archives; FSMS evolution; data scalability; data compression
- **Science Processing (\$500K)**
 - Beowulf parallel processing; reconfigurable computing; product algorithm development environment
- **Automated System Operations (\$600K)**
 - Managing services and resources in distributed enterprise; assessing user requests for V0 IMS help
- **Network Prototypes (\$200K)**
 - Technology assessment/performance testing; security authentication; tuning ATM for high performance analysis tools



Sample Prototypes

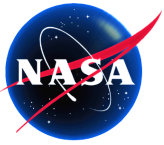
- **Dynamic Query Technology for GCMD and V0 IMS (UM)**
- **Gazetteer development (UCSB)**
- **WebTheme text analysis and viz tool for SEDAC (PNNL, CIESIN)**
- **Custom Order Processing and Subsetting (UAH)**
- **ATM test of distributed Image Spreadsheet (GSFC, STX)**
- **Interdomain Cooperative Enterprise Management end-end network performance information for users (STX, U Mo)**
- **Rapid Coincidence Search prototype (CSC)**
- **LinkWinds and WebWinds HDF-EOS capability (JPL)**
- **Data & Information Access Link (DIAL) (STX)**
- **Informix HDF-EOS DataBlade (Ecologic)**
- **Level 1 processing FPGA technology for MODIS (SGT)**



Prototyping Program Snapshot

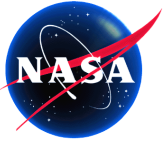
- Prototype management - budget, contracts, tracking
 - 26 ongoing prototypes/studies; 4 new prototypes getting started
 - 3 proposals in review, 1 new proposal in preparation
 - Prototype Tracking System (PTS) web site quarterly status reports
- EOSDIS Technology Workshops (3rd workshop - June 98)
- Who does ESDIS prototyping:

<u>Universities</u>		<u>Industry</u>	<u>Agencies</u>
• UCSB	• UAH	• ECS (2)	• NSIDC
• Oregon	• GMU	• STX	• NIST
• Maryland	• Tulane	• CSC	
• Illinois (NCSA)		• Ecologic	<u>NASA</u>
• Rutgers		• SES	• GSFC
• Georgia Tech		• SGT	• JPL
• Missouri		• SSAI	• ARC
• San Jose State			



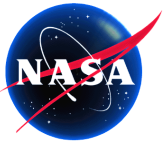
Program Evolution via EITP RFI

- **Earth Science Information Technology Program (EITP)**
 - Build on Cody Y “Concepts for Science and Applications Missions in the Post-2002 Era” Request For Information (RFI) approach
 - Purpose is to identify next generation ESE information technologies for investment
 - Reference ES Vision, NEW DISS, ESIP Federation, Mission Ops Architecture Study
 - Solicit responses from Earth Science and Computer Science community
 - Similar review process as for Code Y RFI (panel reviews and recommendations)
 - Identified information technologies ranked and rated for near, mid and far term ES applications
 - Competitive NRA to be formulated for HQ selecting official
 - » Multi-panel evaluations against TBD criteria
 - » Contract and Grant awards



Recent Actions

- **Ames Advanced Information Systems Meeting (1/12-13)**
 - Walt Brooks identified as ARC point of contact for ESTO
 - Ames to produce white papers addressing IT peer/expert review strategy, TRL for IT, other topics
 - Need for IT Roadmaps, leveraging ES Vision roadmaps and Easton Blue Book (results of Post-2002 RFI)
- **New Distributed Information Systems and Services (New DISS) Meeting (1/20-22)**
 - Ames/GSFC drafting technology recommendations
 - New DISS report to Code Y expected March 99



Next Steps

- **Draft EITP RFI - 2/1/99**
- **New DISS input - 3/1/99**
- **HQ Review and Release of RFI - 3/1/99**
- **Receive and Review RFI Responses - April to May 99**
- **Prepare and Release NRA - June to Dec 99**
- **Receive and Evaluate NRA Proposals - Feb to March 00**
- **Select and Award NRAs - April to May 00**

- **EITP Roadmap and Investment Plan Development - TBD**
 - **Near, Mid and Far-Term perspectives and missions**
 - **ESIP Federation and New DISS Drivers**
 - **Easton Blue Book Mission Needs**
 - **ES Vision Technology Drivers and Roadmaps**
 - **Other technology inputs**